

ABSTRACT OF THE DISCLOSURE

Disclosed is a routing apparatus for obtaining routing data conforming to a destination address of a packet that arrives from a line, adding the routing data onto the packet, and switching the packet based upon the routing data to send the packet to a prescribed line. The routing apparatus has a main controller equipped with content addressable memories (CAMs) corresponding to respective ones of line speed. When search key data with an attached line identifier is received from a line card, routing data is generated by the content addressable memory (CAM) corresponding to the line speed and the routing data is sent to the line card. The line card adds routing data of which it has been notified by the main controller onto a packet and then outputs the packet. A switch to which a packet having attached routing data is input from a prescribed line card switches the packet based upon the routing data and sends the packet to another line card.

09757300-012301

UNITED STATES PATENT AND TRADEMARK OFFICE
DOCUMENT CLASSIFICATION BARCODE SHEET



Drawings

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FIG. 1

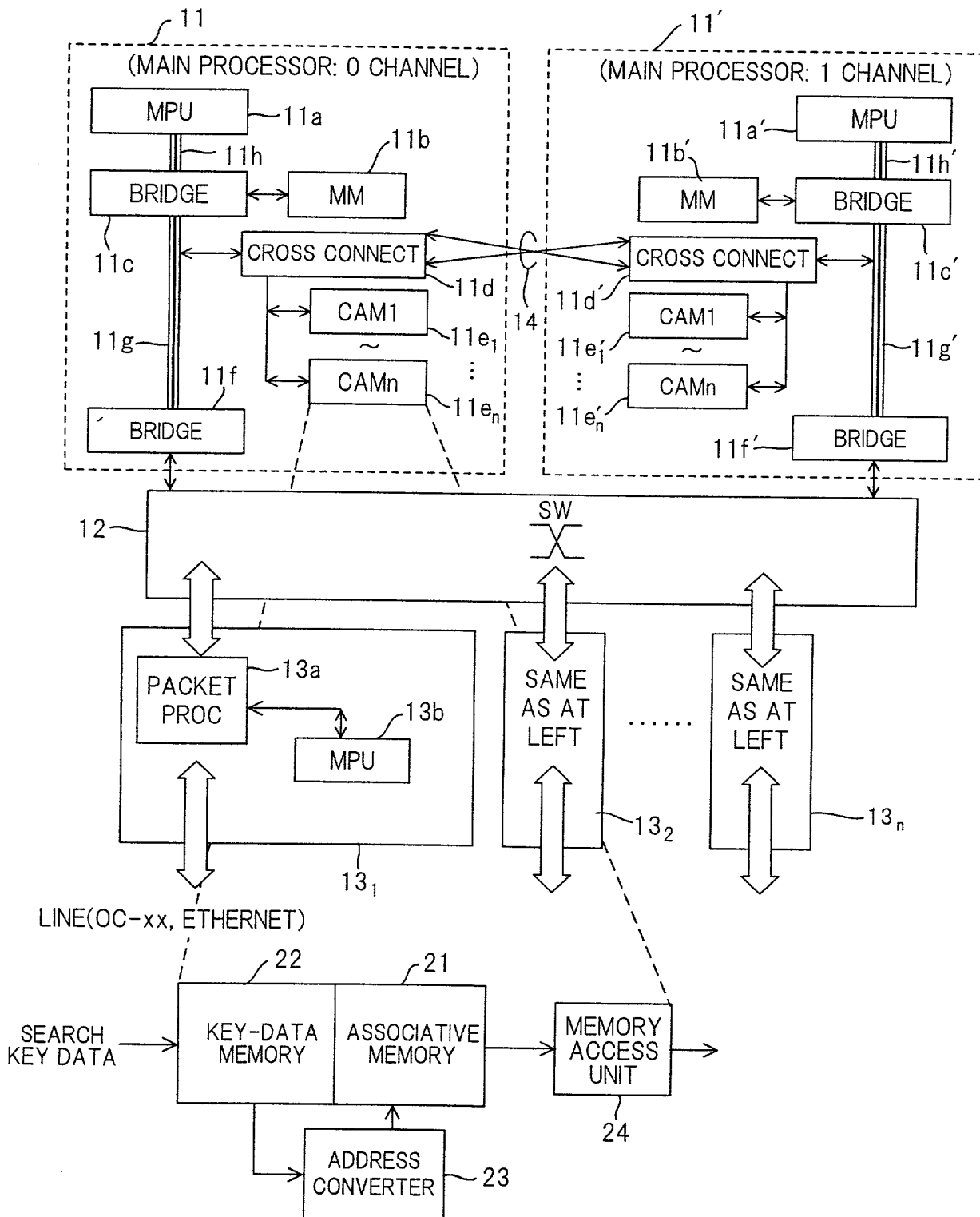


FIG. 2A

TRANSMISSION OF OC-12C PPP PACKET

| ITEMS | VALUE | IP DATA FLUCTUATION | TOTAL TRANSFER TIME(μ S) |
|--|-------|---------------------|-------------------------------|
| OC-12C TRANSFER TIME | 1.6 | 1 | 0.36 |
| PPP + FIXED PART OF IP HEADER (bytes) | 27 | 2 | 0.37 |
| IP DATA FLUCTUATION (bytes) | n | 3 | 0.39 |
| | | 4 | 0.40 |
| TOTAL TRANSFER TIME = (n + PPP + FIXED PART OF IP) * OC-12C TRANSFER | | ~ | ~ |
| | | 10 | 0.48 |
| | | ~ | ~ |
| | | 64 | 1.17 |
| | | ~ | ~ |
| | | 128 | 1.99 |
| | | ~ | ~ |
| | | 1024 | 13.52 |
| | | ~ | ~ |
| | | 1500 | 19.64 |

FIG. 2B

TRANSMISSION OF OC-192C PPP PACKET

| ITEMS | VALUE | IP DATA FLUCTUATION | TOTAL TRANSFER TIME(μ S) |
|---|-------|---------------------|-------------------------------|
| OC-192C TRANSFER TIME(ns) | 0.1 | 1 | 0.02 |
| PPP + FIXED PART OF IP HEADER (bytes) | 27 | 2 | 0.02 |
| IP DATA FLUCTUATION (bytes) | n | 3 | 0.02 |
| | | 4 | 0.02 |
| TOTAL TRANSFER TIME = (n + PPP + FIXED PART OF IP) * OC-192C TRANSFER | | ~ | ~ |
| | | 10 | 0.03 |
| | | ~ | ~ |
| | | 64 | 0.07 |
| | | ~ | ~ |
| | | 128 | 0.12 |
| | | ~ | ~ |
| | | 1024 | 0.84 |
| | | ~ | ~ |
| | | 1500 | 1.23 |

FIG. 3

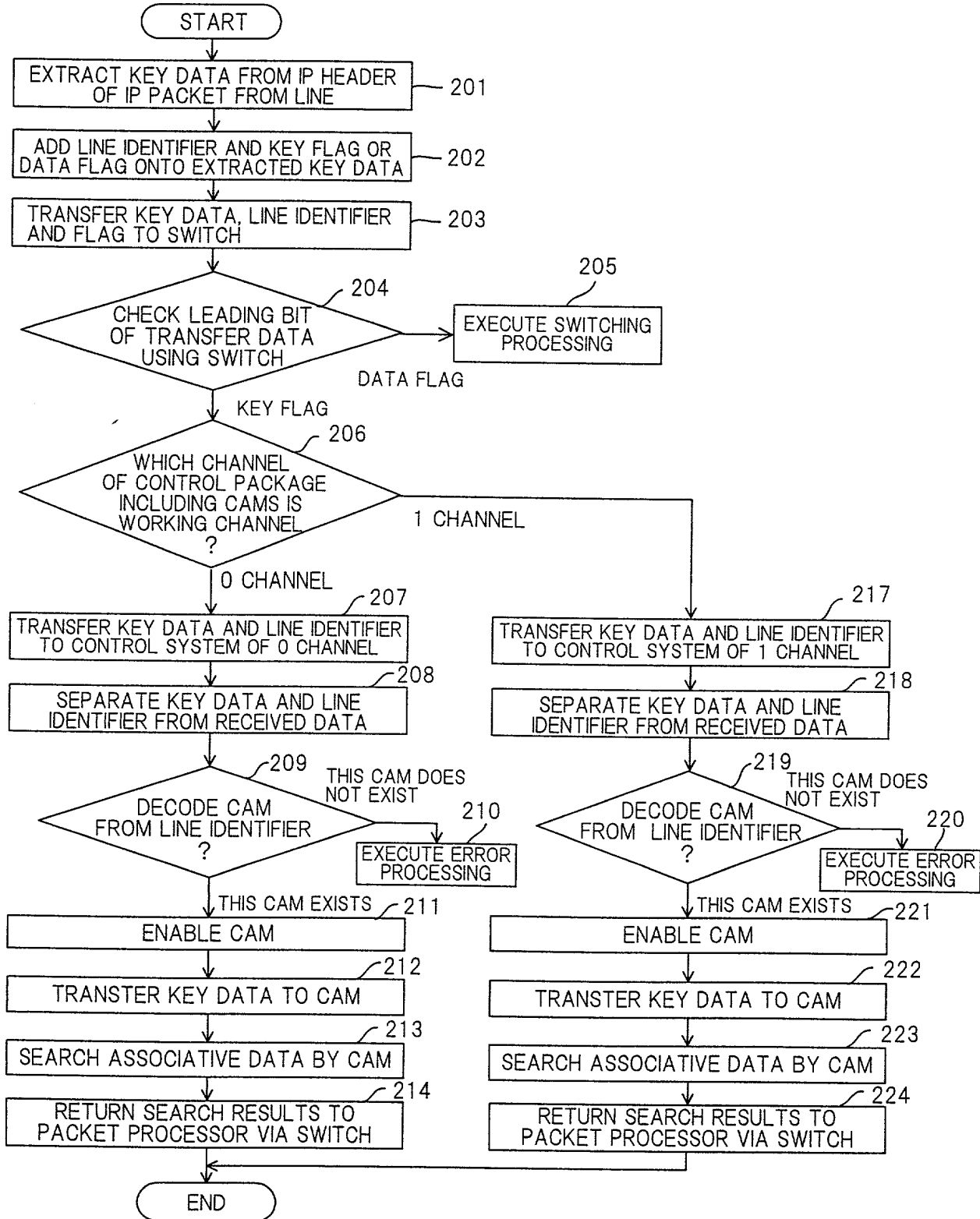


FIG. 4A

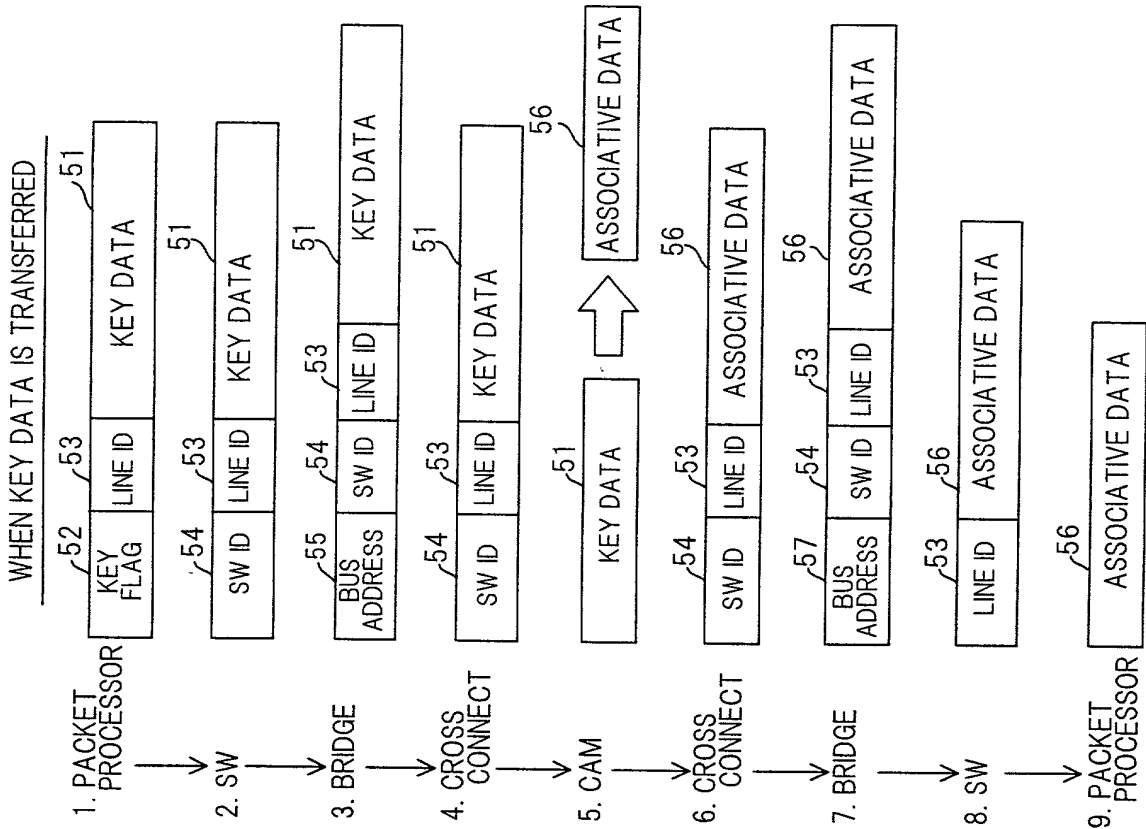


FIG. 4B

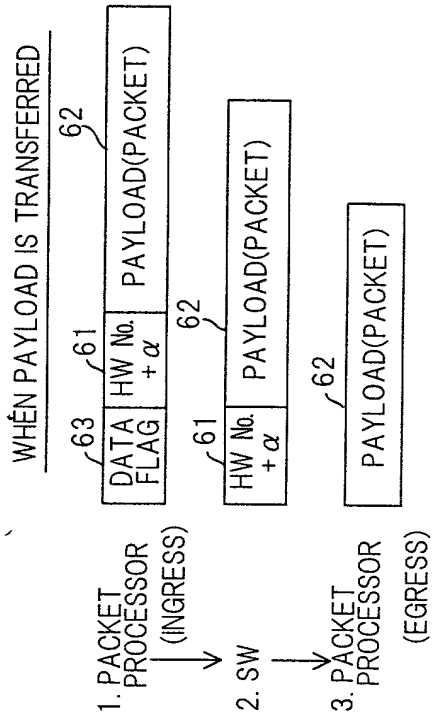


FIG. 5

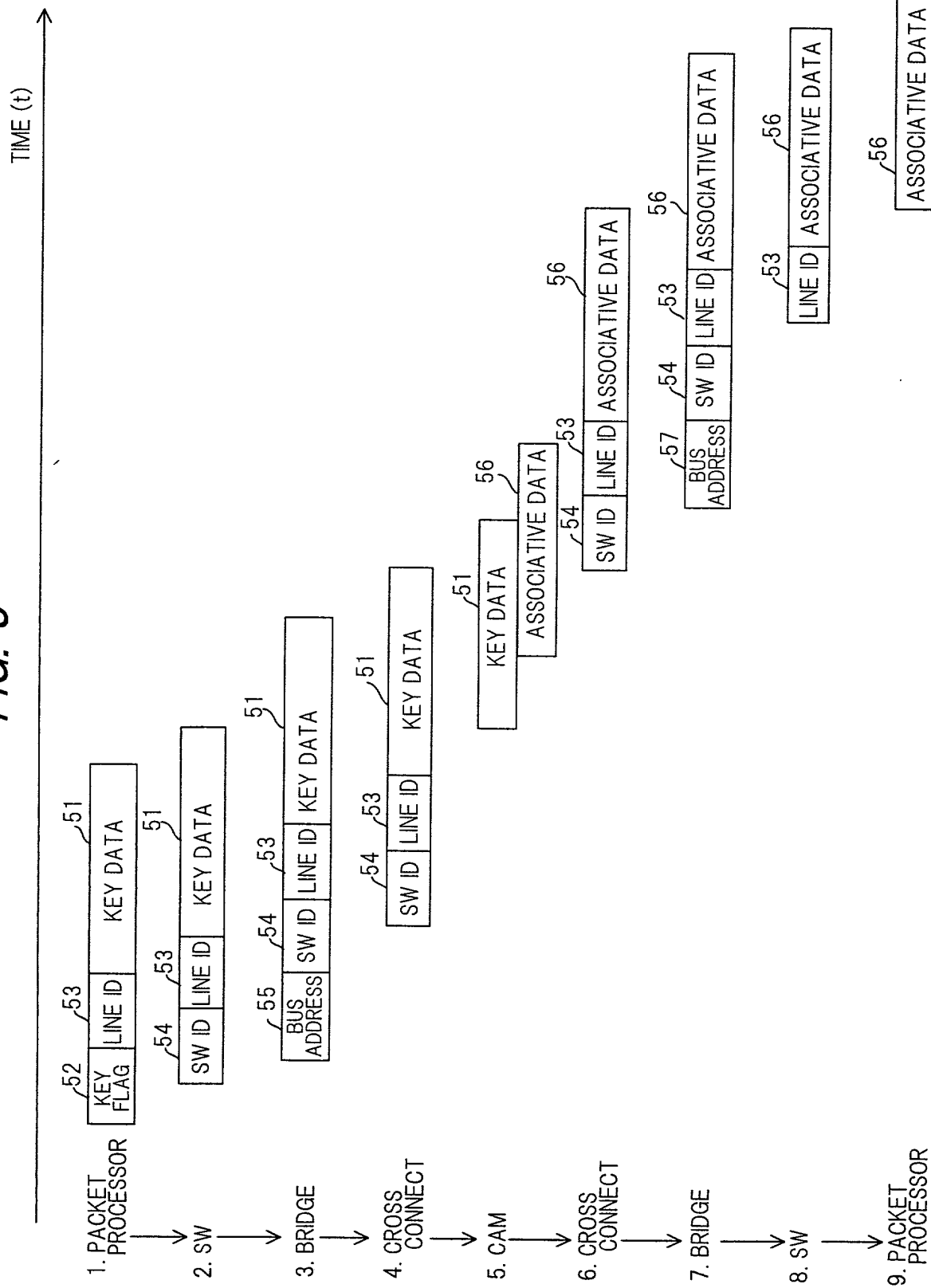


FIG. 7

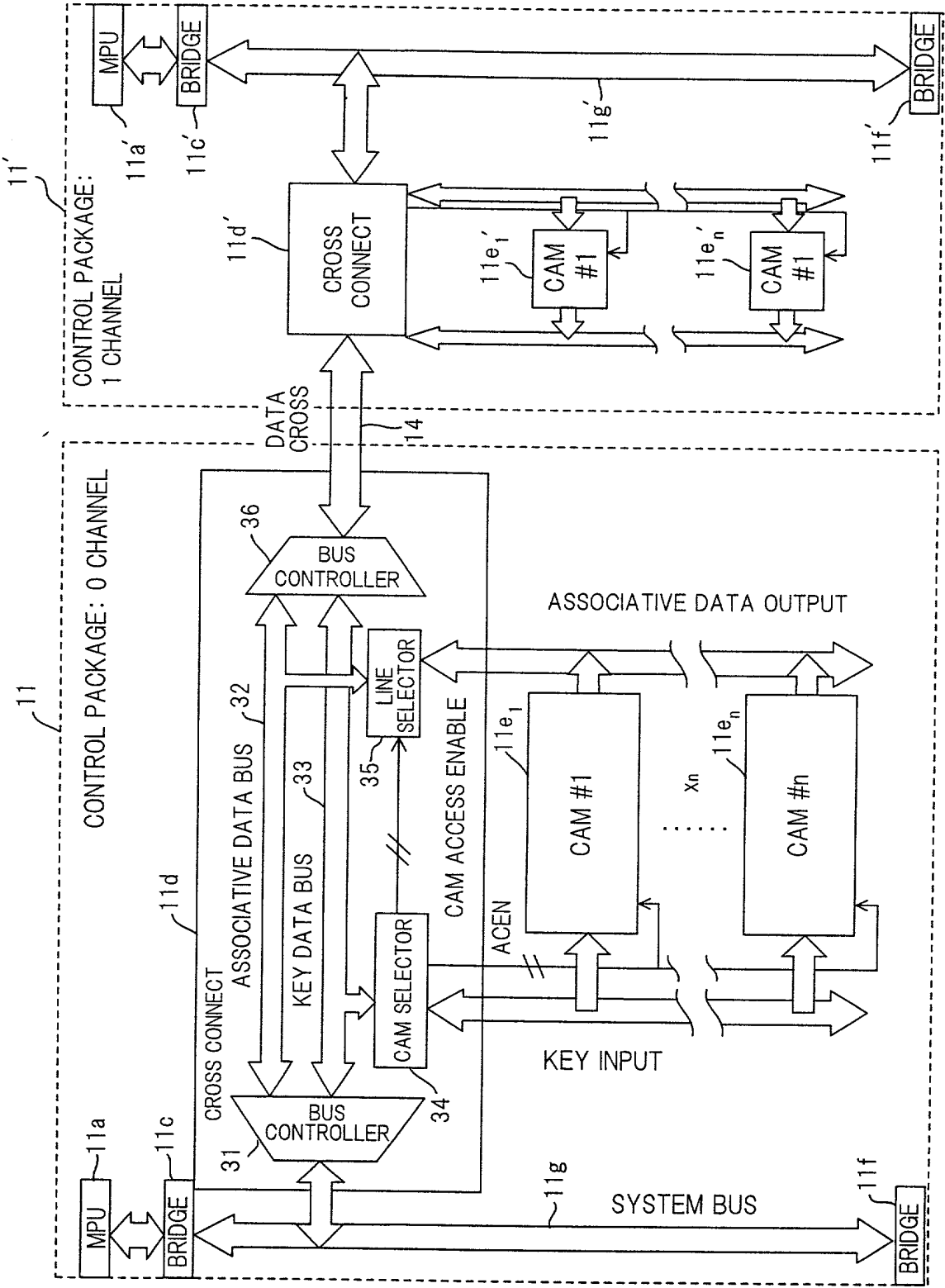
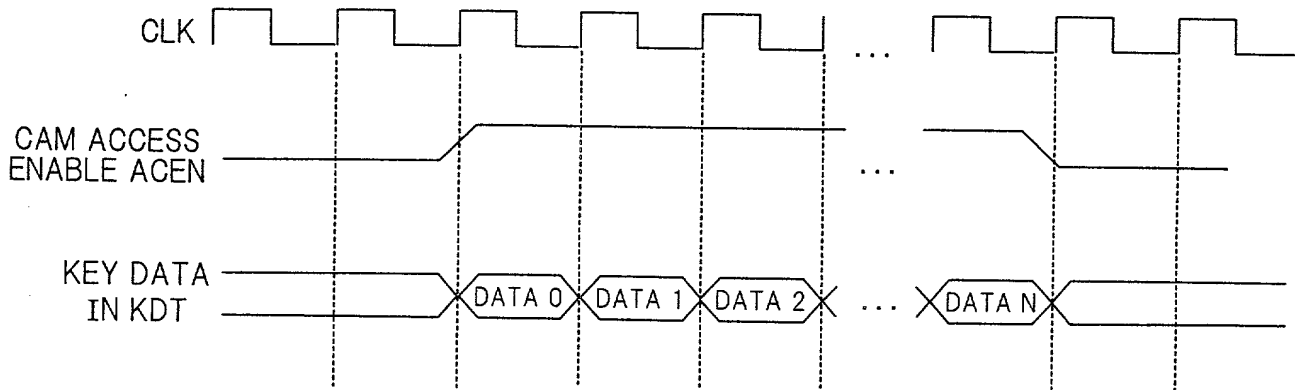


FIG. 8*FIG. 11*

| | | | |
|--------------------------------|---|-------|--------|
| RAM CELL WIDTH (bytes) | | 1 | 1 |
| RAM CELL WORD COUNT | y | 1,000 | 16,384 |
| KEY DATA WIDTH (bytes) | k | 4 | 16 |
| ASSOCIATIVE DATA WIDTH (bytes) | r | 2 | 2 |
| TOTAL ENTRY COUNT | | ↓ | ↓ |
| $e=y/(k+r)$ | = | 167 | 910 |

FIG. 9

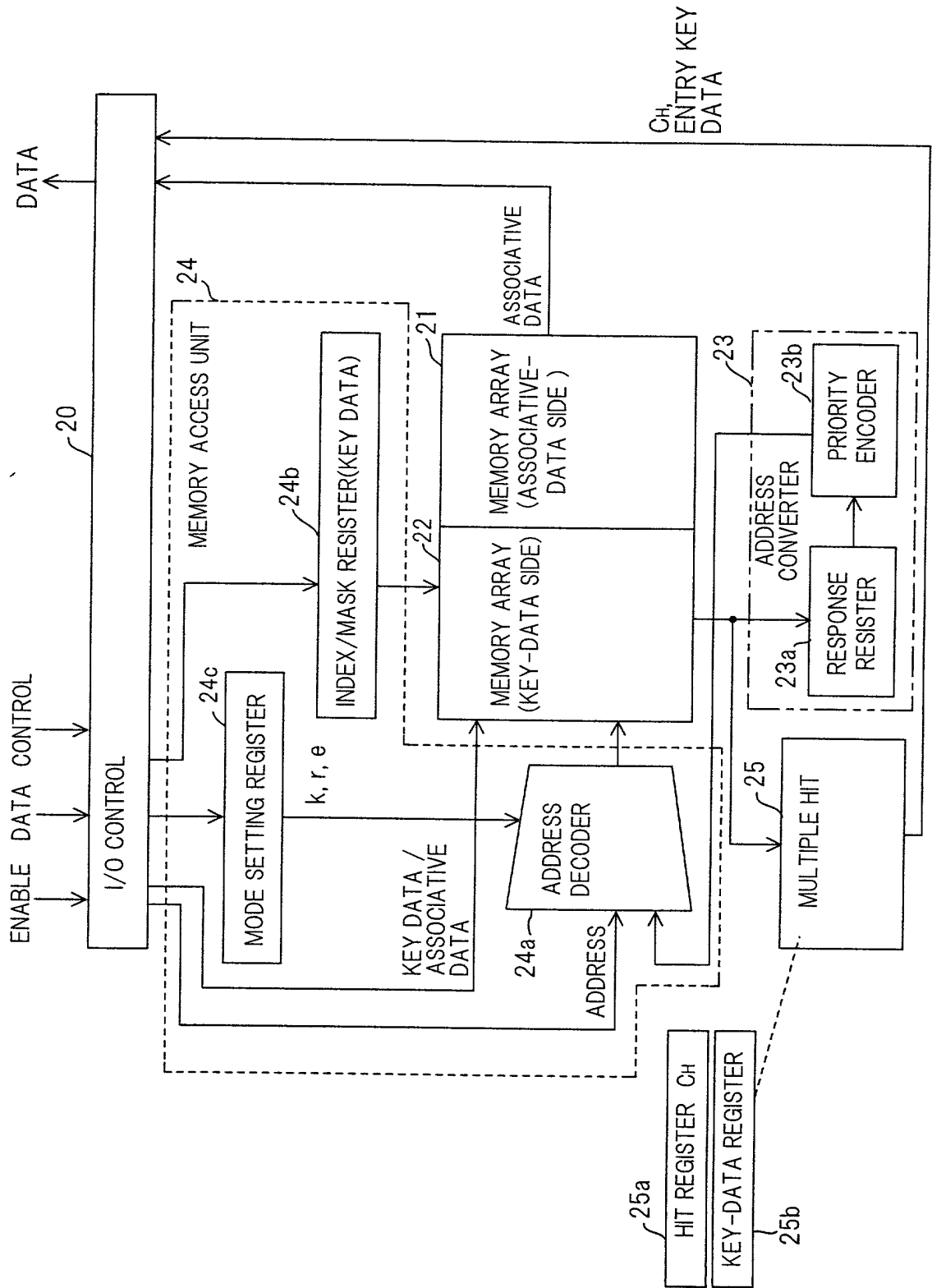


FIG. 10

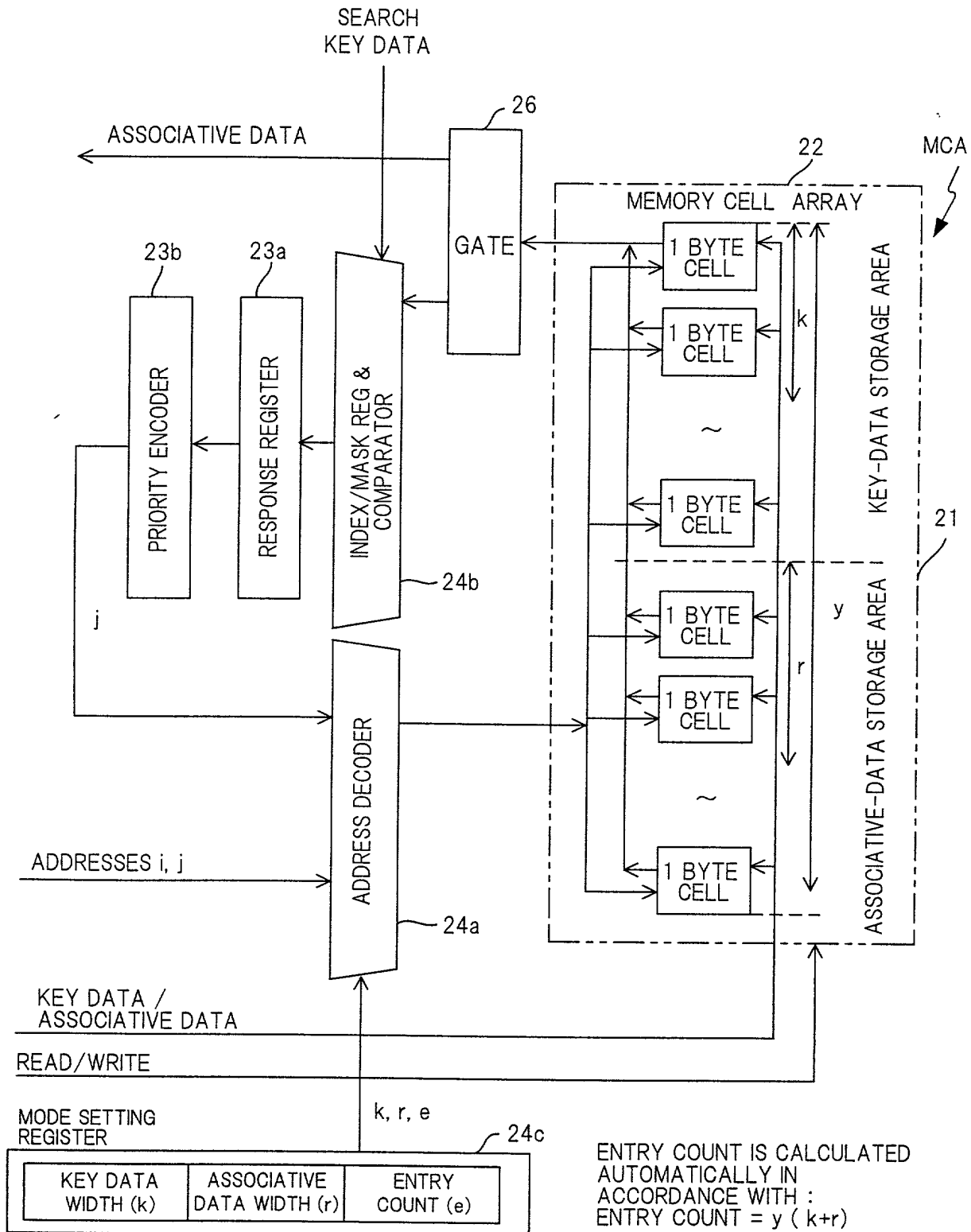
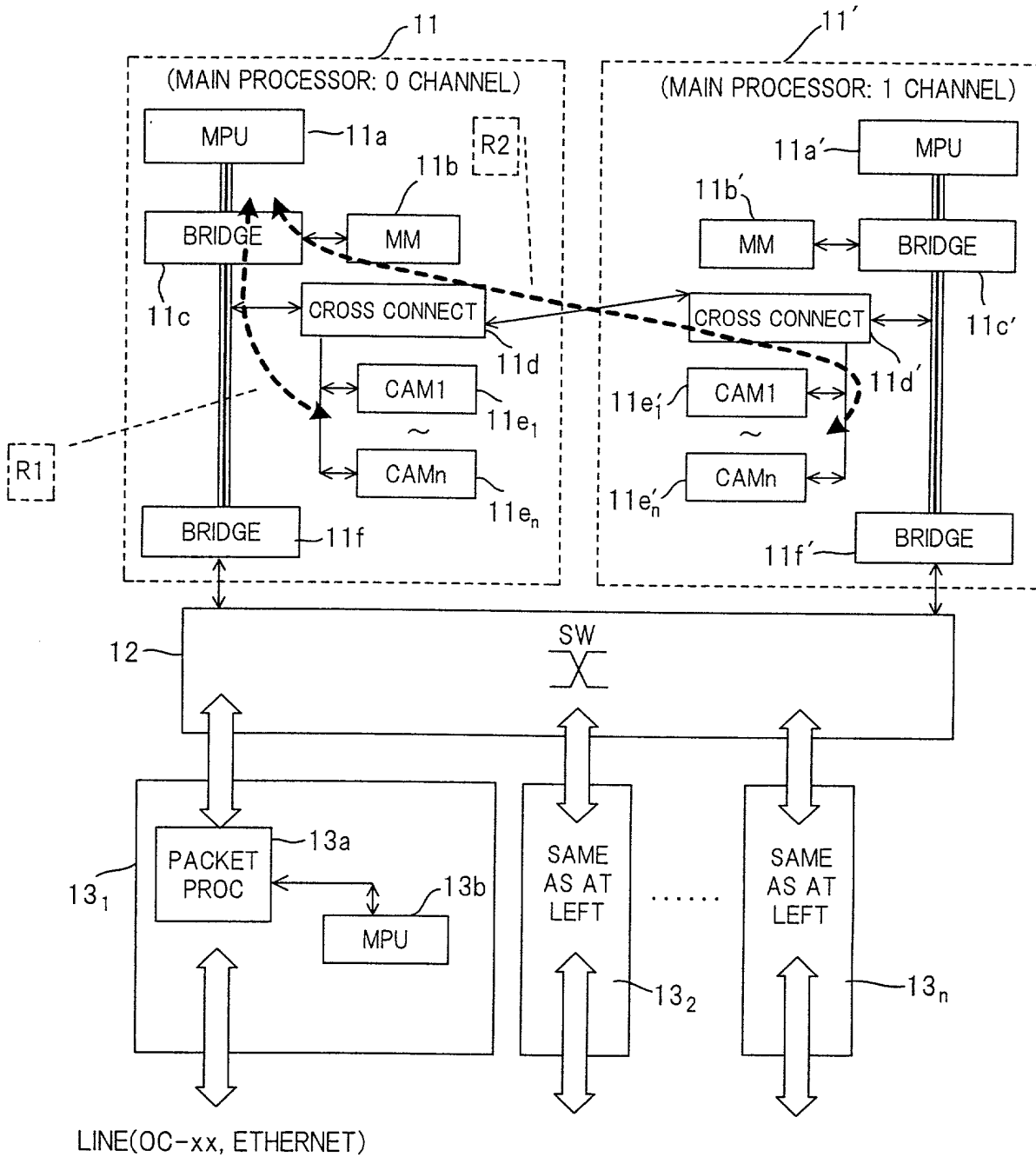
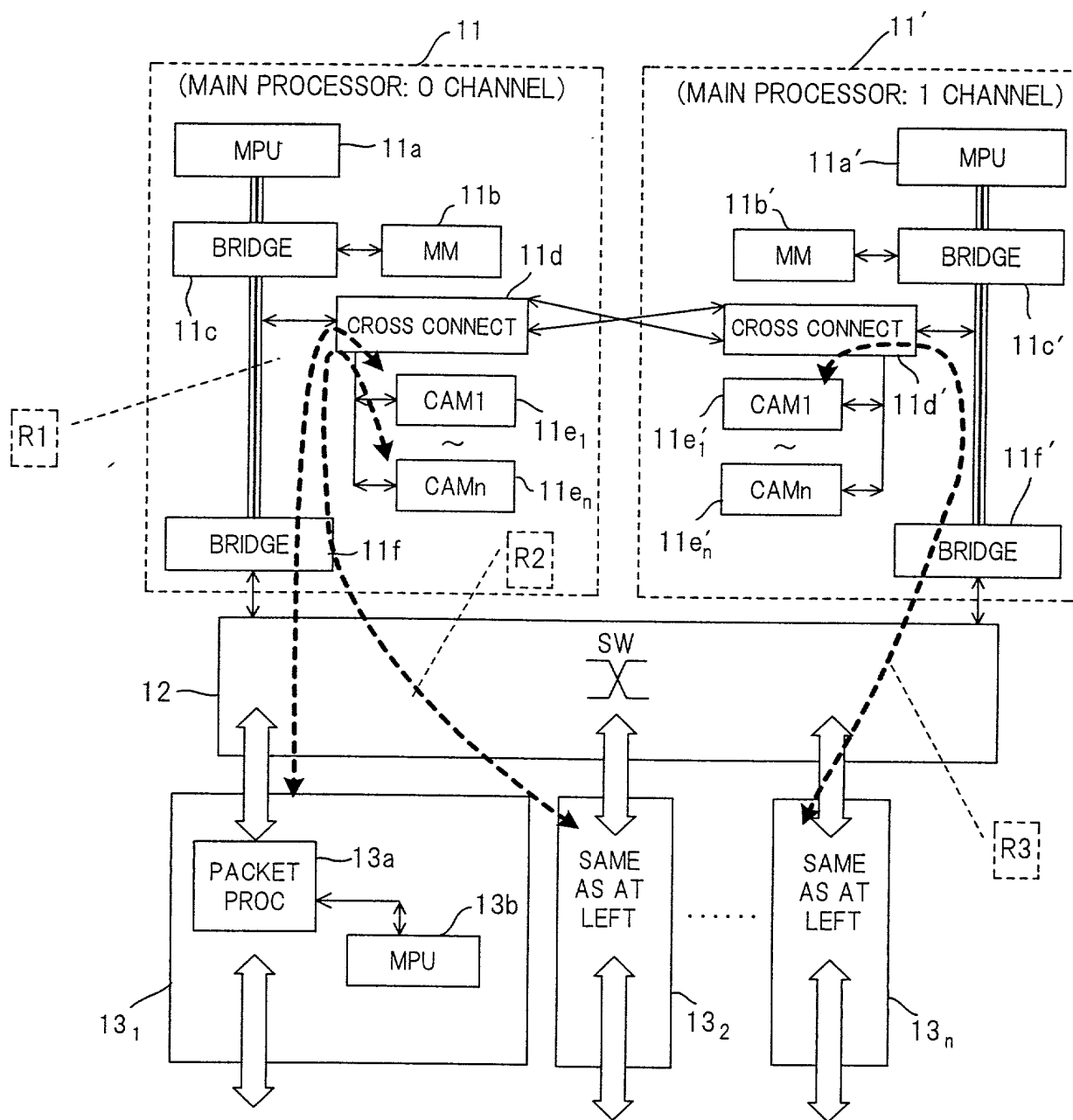


FIG. 12



LINE(OC-xx, ETHERNET)



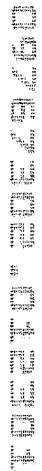
[illegible]

FIG. 15 PRIOR ART

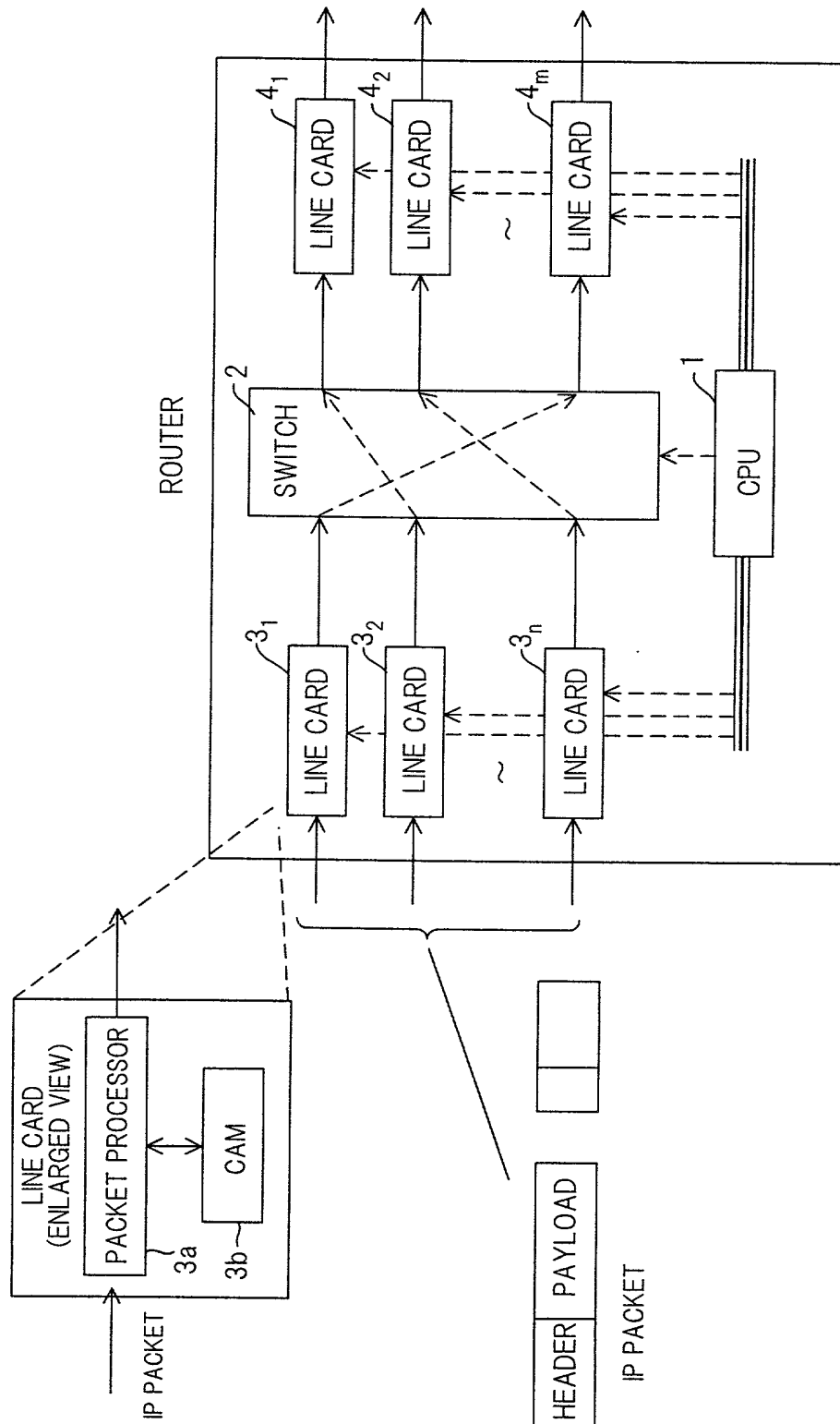


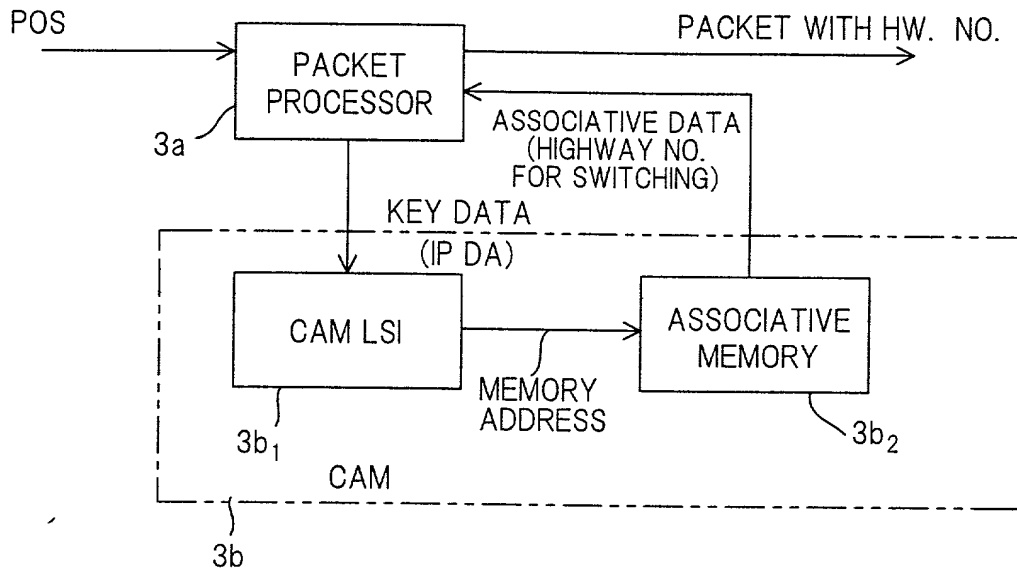
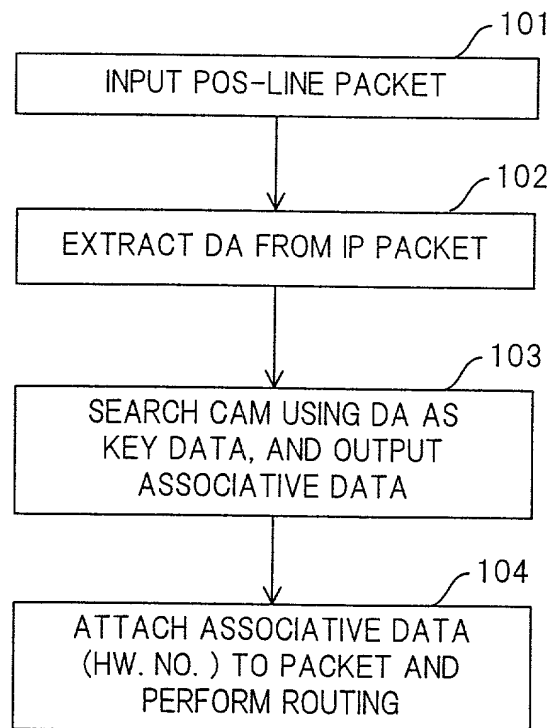
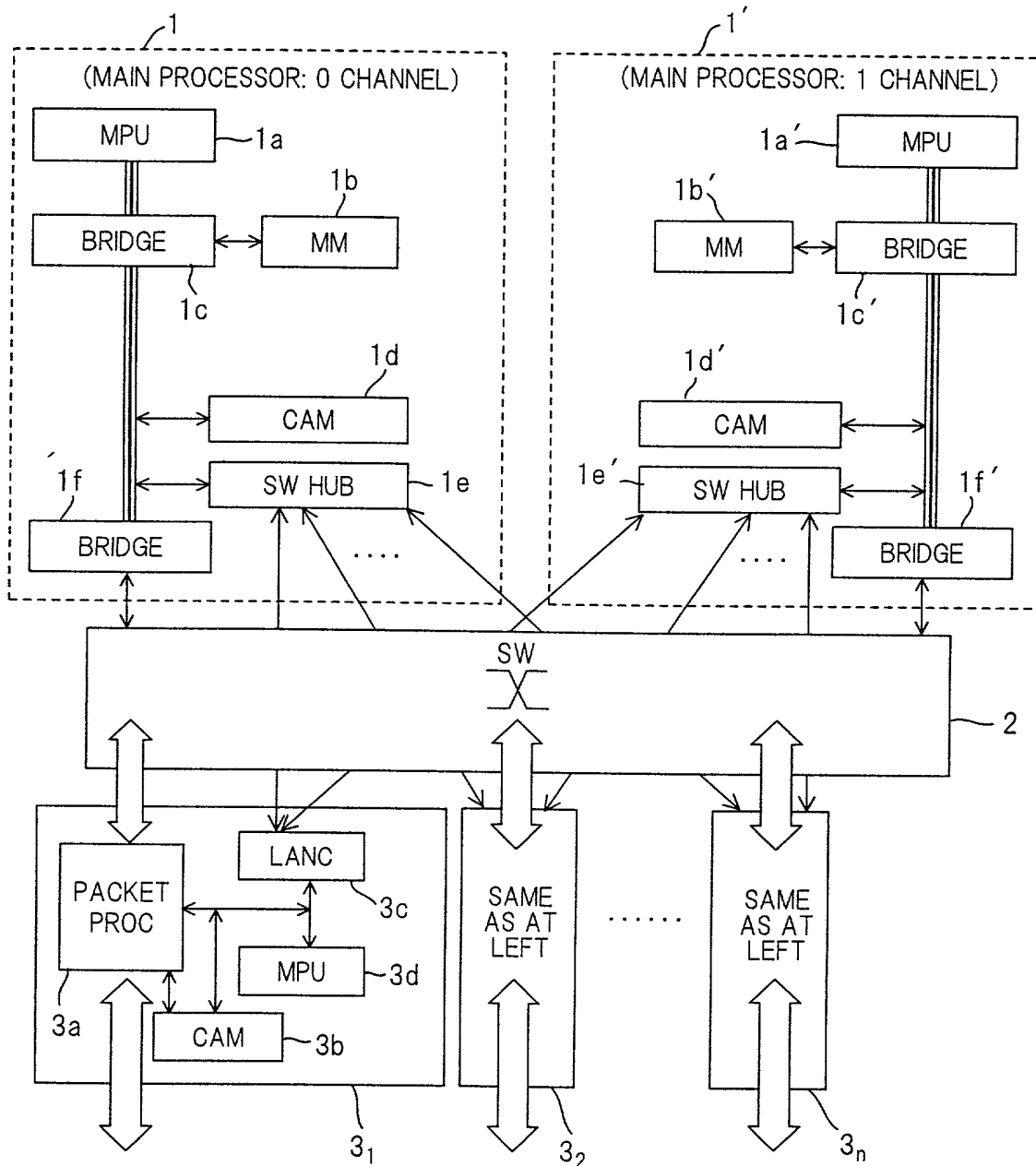
FIG. 16 PRIOR ART*FIG. 17 PRIOR ART*

FIG. 18 PRIOR ART

LINE(OC-xx, ETHERNET)

FIG. 19 PRIOR ART

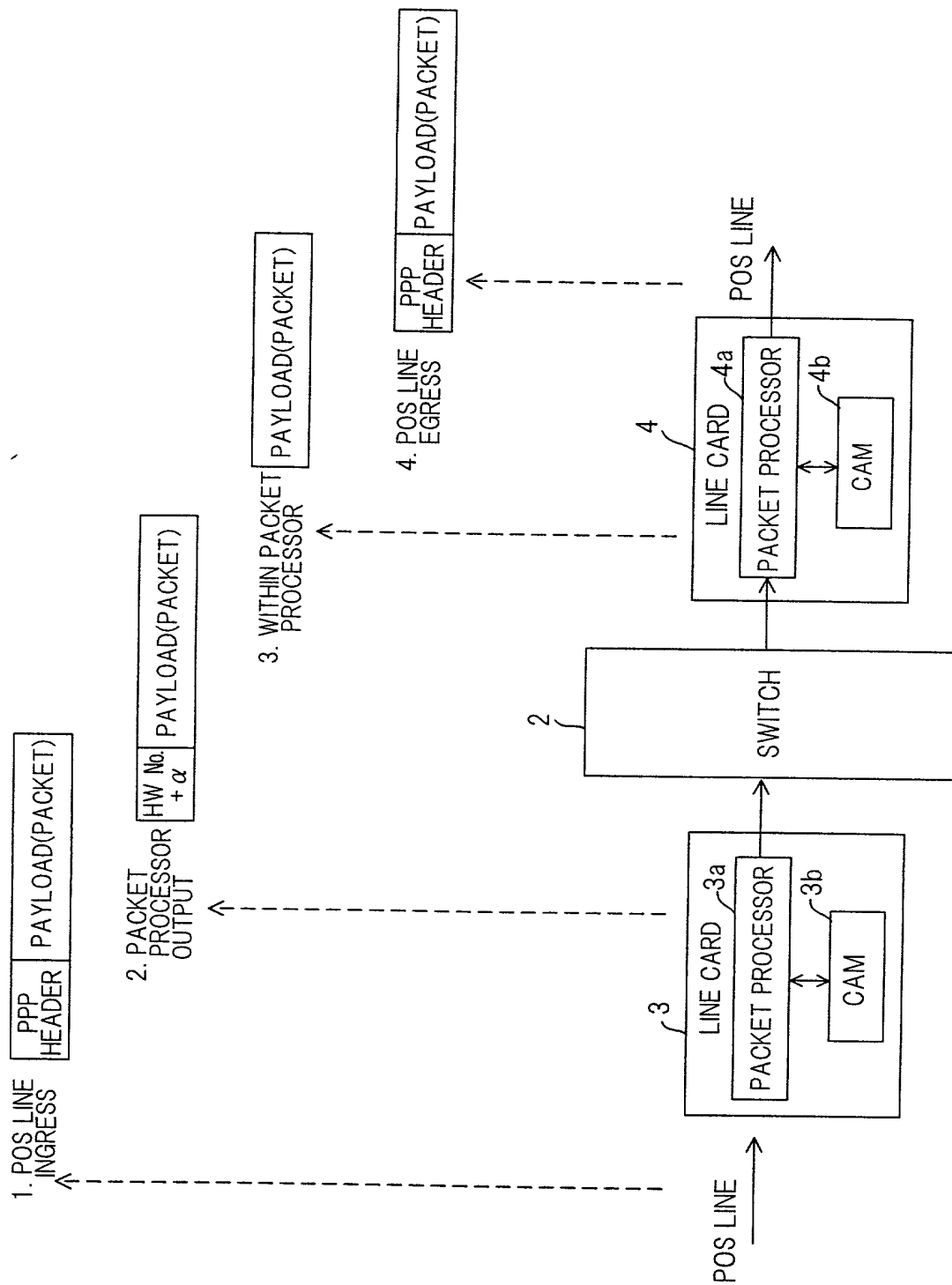
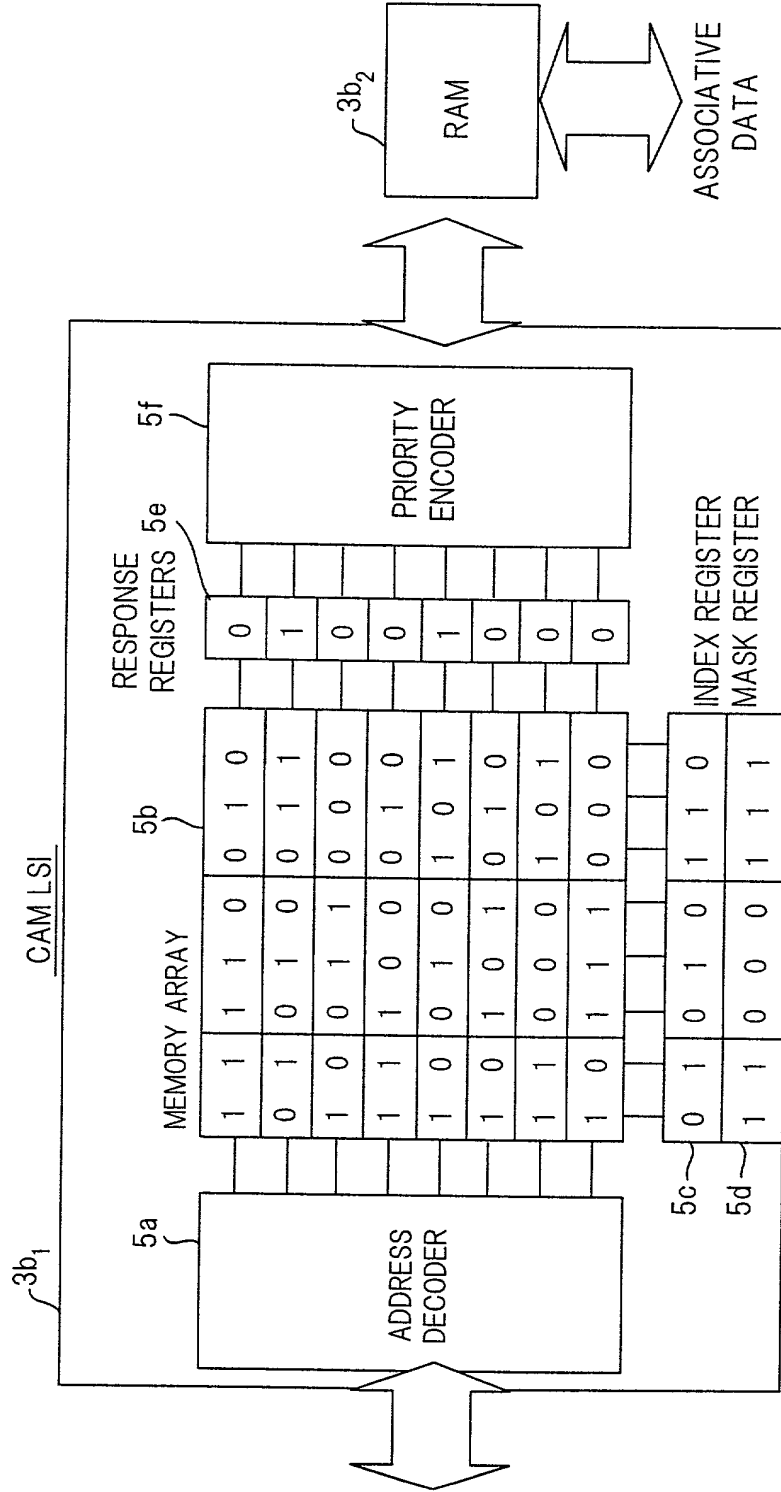


FIG. 20 PRIOR ART



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**Oath/Declaration, Small Entity,
and Power of Attorney**

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PTO/SB/106 (8-96)

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ROUTING APPARATUS

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Page 1 of

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Prior Foreign Application(s)

外国での先行出願

TOKUGAN 2000-295841

Japan

(Number)
(番号)

(Country)
(国名)

(Number)
(番号)

(Country)
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Priority Not Claimed
優先権主張なし

28/09/2000

(Day/Month/Year Filed)
(出願年月日)

(Day/Month/Year Filed)
(出願年月日)

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below.

(Application No.)
(出願番号)

(Filing Date)
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I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s), or 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code Section 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of application.

(Status: Patented, Pending, Abandoned)
(現況: 特許許可済、係属中、放棄済)

(Status: Patented, Pending, Abandoned)
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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith (list name and registration number)

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(Supply similar information and signature for third and subsequent joint inventors.)

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In re the Application of: **Kazuyuki SATO, et al.**

Filed : **Concurrently herewith**

For : **ROUTING APPARATUS**

Serial No. : **Concurrently herewith**

January 23, 2001

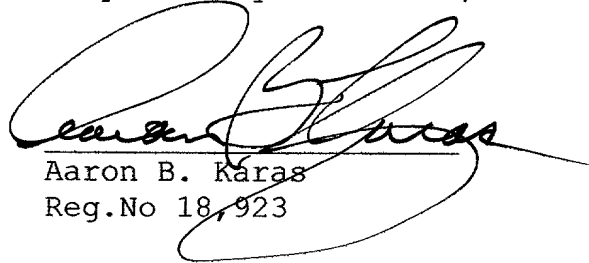
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SUB-POWER OF ATTORNEY

S I R:

I, Aaron B. Karas, Reg. No. 18,923 attorney of record herein, do hereby grant a sub-power of attorney to Linda S. Chan, Reg. No. 42,400, Harris A. Wolin, Reg. No. 39,432, Brian S. Myers, Reg. No. 46,947 and Michael Markowitz, Reg. No. 30,659 to act and sign in my behalf in the above-referenced application.

Respectfully submitted,


Aaron B. Karas
Reg.No 18,923

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